Attorney's Docket No.: 02894-596002 / BAG 80043-Div.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Charles C. Packham et al.
Serial No. : 09/826,720
Filed : April 5, 2001
Title : SHAVING SYSTEM AND FOILS

Art Unit : 3724
Examiner : C. Goodman

Mail Stop Petitions
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BRIEF ON APPEAL

(1) Real Party in Interest

The real party in interest is Braun GmbH, the assignee.

(2) Related Appeals and Interferences

Applicants note that there is an appeal filed on the same day for parent application 09/422,758 for a final rejection on the same day as for this appeal, but applicants do not believe that that appeal, which involves a shaving cutter with a specified skin engaging surface, involves similar issues on appeal.

(3) Status of Claims

Independent claims 22, 24 and 41 stand finally rejected. Claims 23 and 25-40 have been withdrawn from consideration. Claims 1-21 have been cancelled.

(4) Status of Amendments

There are no unentered amendments.

CERTIFICATE OF MAILING BY FIRST CLASS MAIL

I hereby certify under 37 CFR §1.8(a) that this correspondence is being deposited with the United States Postal Service as first class mail with sufficient postage on the date indicated below and is addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

August 16, 2004
Date of Deposit

Bethany Slack
Signature

BETHANY SLACK
Typed or Printed Name of Person Signing Certificate

(5) Summary of Invention

Independent claim 22 generally relates to making an electroformed shaving cutter (e.g., the apertured foil **111** having complex surfaces**114, 115, 116a, 116b** being used in an electric razor, as shown in **Figs 1-4**).

Conventionally, in such manufacture, (a) one typically starts with a substrate (e.g., mandrel **261** in **Figs. 28, 30**) that has an electrically conductive surface in the desired shape for the foil, (b) a layer of photoresist material is then applied to the electrically conductive surface of the substrate, (c) the photoresist material is exposed to electromagnetic radiation through a mask (having a pattern to provide desired locations for apertures in the shaving cutter), (d) the photoresist is then developed, leaving photoresist where apertures are desired in the shaving cutter, and (e) a metallic layer is then deposited by electrodeposition onto the conductive surface at regions that are not coated with the photoresist. The deposited metal layer (which has the shape of the upper surface of the substrate) is the shaving cutter, which is removed from the surface of substrate and photoresist portions that occupy the apertures of the cutter.

In such electroforming, the photoresist material typically is applied to the substrate (step "b" above) in liquid form by dipping or is applied in the form of a preformed thin plastic film, and there is a possibility of drips when using liquid dipping (leading to nonuniform thickness) and creases and folds (particularly on curved shapes) when using the film. (See, e.g., **page 13, lines 9-19** of the specification.)

The invention, as claimed in independent claim 22, is directed to a particular technique for applying the photoresist material to the substrate. In particular, as described in step (b) of claim 22, the photoresist material (**22 in Fig. 30**) is electrophoretic, and an electric current is passed through the coating while it is being applied. (**Fig. 30, p. 12, lines 26-31; p. 15, lines 19-22**) As described in the specification at **page 13, lines 20-33**:

> This problem can be addressed by the use of an electrophoretic photoresist. Such a resist can be applied to a mandrel by the passage of electrical current. This not only causes the photoresist to adhere firmly to the substrate, but also produces a uniform thickness. Since the photoresist is non-conductive, the thickness is self-limiting. Thus, when the required thickness is achieved, the passage of electric current ceases and the deposition process is arrested. The thickness may nevertheless be controlled by adjustment of solution temperature, current density, voltage and deposition time. Such photoresists thus have the

advantage of coating the whole mandrel with a film of uniform thickness irrespective of the shape of the mandrel.

(6) Issues

Whether independent claim 22 is anticipated by Otsuka. U.S. Patent No. 5,473,818

Whether independent claim 22 is obvious in view of Otsuka U.S. Patent No. 5,473,818 in view of Blume U.S. Patent No. 4,056,992.

(7) Grouping of Claims

Claims 22, 24 and 41 stand or fall together.

(8) Argument

As noted above, in conventional manufacture of an electroformed razor, (a) one typically starts with a substrate that has an electrically conductive surface in the desired shape for the foil, (b) a layer of photoresist material is then applied to the electrically conductive surface of the substrate, (c) the photoresist material is exposed to electromagnetic radiation through a mask (having a pattern to provide desired locations for apertures in the shaving cutter), (d) the photoresist is then developed, leaving photoresist where apertures are desired in the shaving cutter, and (e) a metallic layer is then deposited by electrodeposition onto the conductive surface at regions that are not coated with the photoresist. The deposited metal layer (which has the shape of the upper surface of the substrate) is the shaving cutter, which is removed from the surface of substrate and photoresist portions that occupy the apertures of the cutter.

The cited Otsuka U.S. Patent No. 5,473,818 describes such a conventional use of photoresist 37 to prevent metal deposition at areas covered by the photoresist during electroforming of a foil. (col. 10, lines 21-23, Figs. 23A, B).

The cited Blume U.S. Patent No. 4,056,992 similarly describes putting down a layer of photoresist material (called a sensitized coating) which is exposed to light and developed by positive or negative techniques to result in isles 2 of "photoresisting material in those regions corresponding to the apertures of the screen [i.e., foil] to be formed." (col. 4, lines 8-10). Thereafter, some metal inserts 3 (which are subsequently removed so as to not be present in the

final product) are added by electrodeposition, and then the metal 4 of the resulting razor foil is electrodeposited as usual. In the end product (shown in Fig. 4) metal 4 is what makes up the shaver foil.

In such electroforming, the photoresist material typically is applied to the substrate (step "b" above) in liquid form by dipping or is applied in the form of a preformed thin plastic film, and there is a possibility of drips when using liquid dipping (leading to nonuniform thickness) and creases and folds (particularly on curved shapes) when using the film.

As described above, in the last paragraph of Section 5 of this brief, independent claim 22 improves on the conventional prior art process in the step (b) of depositing the photoresist material. Claim 22 specifies that the photoresist material is electrophoretic. Claim 22 also specifies that an electric current is passed through the electrophoretic photoresist during its application.

While the February 26, 2003 Office Action neglects to mention claim 22 in the claim rejections (claim 22 is listed as rejected on the cover page), the reference to the discussion of anticipation on Otsuka in the last office action and the assertions of anticipation of dependent claims 24 and 41 make it clear that the Examiner is rejecting independent claim 22 under 35 U.S.C. 102(b) on the basis of Otsuka and under 35 USC 103(a) on Otsuka in view of Blume.

The prior office action referred to Figs. 20-23C, col. 10, lines 1-26 of Otuska.

The statement of the final rejection in the February 26, 2003 office action reads as follows:

> As noted in the last Office Action, Otsuka et al clearly anticipates the claimed invention in that the photoresist in Otsuka et al inherently includes application of the coating by passing an electrical current therethrough since this is the typical method of application. However, since it has been argued that Otsuka et al lacks step (b) as called for in claim 24, then Blume clearly teaches that the masking layer (4) may be electrodeposited as one of several well known coating application methods in the art of dry-shaver shear plate making art. See c. 4, ll. 25-34. Thus, it would have been obvious to the ordinary artisan at the time of the instant invention to provide the method of Otsuka et al with the elector-depositing step to apply a coating as taught by Blume, since as taught and suggested by Blume, this is an obvious applying method step.

As noted above, Otsuka U.S. Patent No. 5,473,818 describes the use of photoresist 37 to prevent metal deposition at areas covered by the photoresist during electroforming of a foil.

Otsuka is silent as to the type of photoresist material used and how it is applied. Otsuka does not disclose or suggest step (b) because Otsuka does not disclose or suggest using an electrophoretic photoresist and Otsuka does not disclose or suggest passing an electrical current through the photoresist material while it is being applied. There is absolutely no basis whatsoever for the assertion in the Office Action that an electrophoretic photoresist and the application of electric current during application of the phototresist are inherent from Otsuka.

Independent claim 22 accordingly is not anticipated by or obvious in view of Otsuka and is allowable under 35 USC 102(b) and 103(a) over Otsuka.

Blume does not make up the deficiencies of Otsuka. In Blume the photoresist is designated 2. It is nowhere described as being electrophoretic, and there is no mention of passing an electric current through it while it is applied. Layer 4 of Blume is the metal of the resulting shaver itself, e.g., called "layer of metallic screen-forming substance 4" at col. 4, lines 25.

Depositing the metal of the resulting product by electrodeposition with the application of electrical current, as in Blume (and in Otsuka and the conventional practice as well) in no way suggests that the photoresist (which has to be nonconductive to work and which does not form part of the final product) should be made of electrophoretic material and put down with the application of electric current.

The subject matter of claim 22 is nowhere suggested by the references, taken alone or in combination, and independent claim 22 is patentable under 35 USC 102(b) and 103(a).

Claims 24 and 41, which depend on claim 22, are allowable for the same reasons.

Applicants submit the accompanying revised Brief on Appeal, including references to pages and line numbers of the specification and to remove reference to cited references as requested in the office action.

No fee is believed to be due. Please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: August 16, 2004

William E. Booth
Reg. No. 28,933

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

20921598.doc

Appendix of Claims

22. A method of producing an electroformed shaving cutter comprising:

a) providing a substrate that has an electrically conductive surface;

b) applying a coating of electrophoretic photoresist to the electrically conductive surface by passing an electrical current therethrough;

c) exposing the photoresist to a suitable source of electromagnetic radiation through a mask that is shaped to conform to that of said electrically conductive surface of said substrate;

d) developing the photoresist; and

e) electrodepositing a metallic layer onto conductive surface regions of the substrate not coated with the photoresist.

24. A method according to claim 22 wherein the substrate is a body of plastics material having an electrically conductive surface coating.

41. A method according to claim 22, wherein the step of applying further comprises applying the electrophoretic photoresist as a liquid.